CONMET®

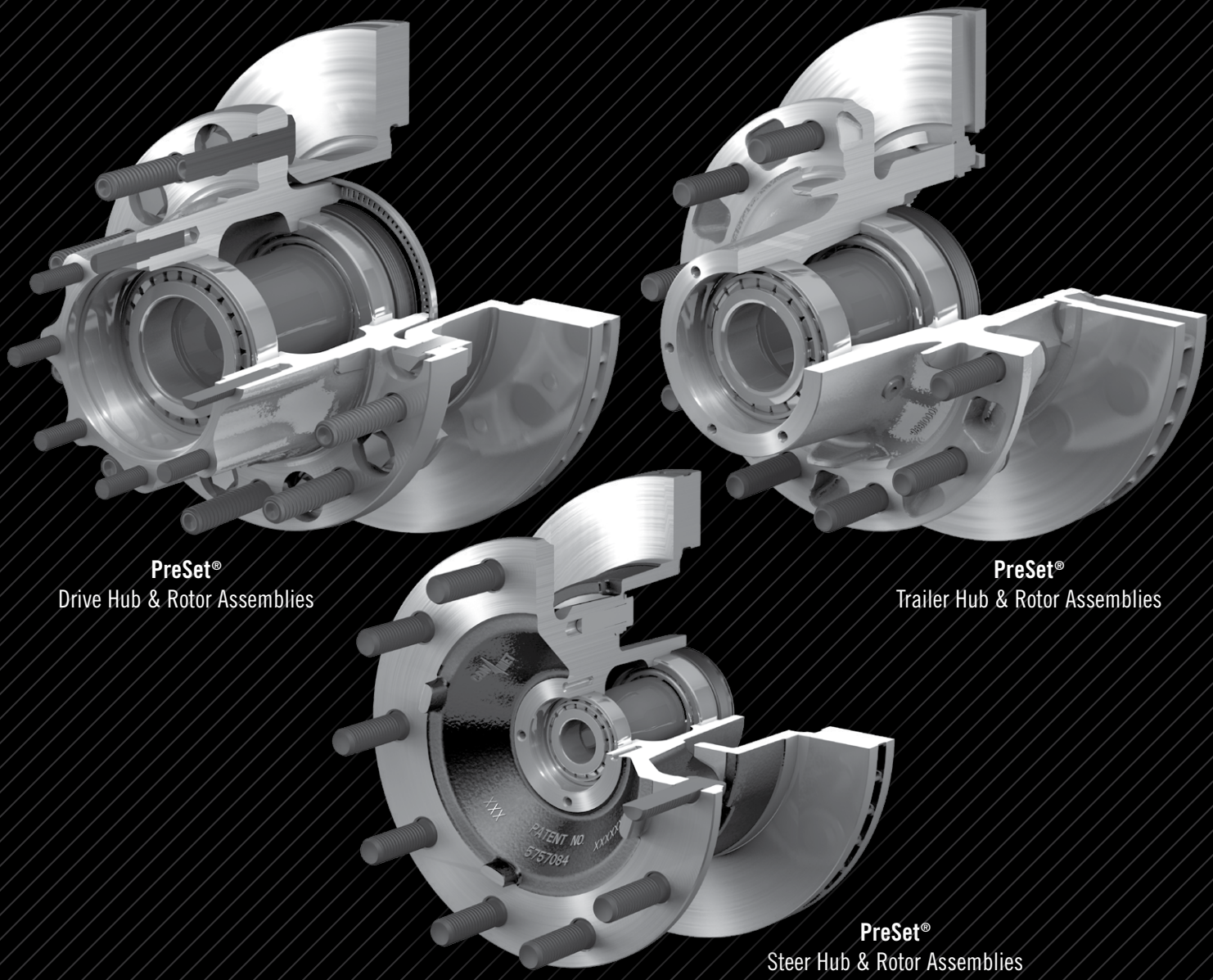
Service Manual

For ConMet Hub & Rotor Assemblies

HD
HEAVY DUTY

MD
MEDIUM DUTY

For Hydraulic &
Air Disc Brakes



PreSet®
Drive Hub & Rotor Assemblies

PreSet®
Trailer Hub & Rotor Assemblies

PreSet®
Steer Hub & Rotor Assemblies

About This Manual

- This service manual applies to brake rotors designed and manufactured by ConMet for air disc brake applications. ConMet also manufactures hub assemblies equipped with brake rotors designed and manufactured by other brake companies. If your vehicle is equipped with a brake rotor other than a ConMet design, please refer to the vehicle or component manufacturer's published service information.
- Information relating to disc brake calipers, pads, or other vehicle-related systems is not included in this manual. Information regarding other brake-related components should be obtained from the vehicle or component manufacturer's published service information.
- Additional information pertaining to servicing ConMet wheel hub assemblies can be found in ConMet Service Manuals 10005642 (PreSet® Hubs) and 10008647 (ConMet Hubs with Manually Adjusted Bearings).
- Read this manual carefully, providing extra attention to its explanations and instructions.
- To ensure safe, continuous, trouble-free operation, understand your wheel hub system, and keep all components in proper operating condition.
- Pay particular attention to all NOTES, CAUTIONS, WARNINGS, and DANGERS to lessen the risk of personal injury or property damage, and realize these statements are not exhaustive. ConMet cannot possibly know or evaluate all conceivable methods in which service may be performed or the possibly hazardous consequences of each method. Accordingly, those who use a procedure not recommended by ConMet must first satisfy themselves that neither their safety nor the safety of the product will be jeopardized by the service method selected.

Before You Begin

1. Read and understand all instructions and procedures before you begin to service components.
2. Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.
3. Follow your company's maintenance and service, installation, and diagnostics guidelines.
4. Use special tools when required to help avoid serious personal injury and damage to components.

Hazard Alert Messages

⚠ DANGER

A Danger alert indicates a hazardous situation which, if not avoided, *will result in death or serious injury.*

⚠ WARNING

A Warning alert indicates a hazardous situation which, if not avoided, *could result in death or serious injury.*

⚠ CAUTION

A Caution alert indicates a hazardous situation which, if not avoided, *could result in minor or moderate injury.*

NOTE

A note includes additional information that may assist the technician in service procedures.

How to Obtain Additional Maintenance and Service Information

On the Web

Visit www.conmet.com to access ConMet's product, sales, service and maintenance literature.

ConMet Customer Service

Call ConMet's Customer Service at 1-800-547-9473.

⚠ WARNING

Disc brake pads may contain both asbestos and non-asbestos materials that may pose a health hazard. Please follow all of the brake pad manufacturer's recommended practices for servicing brakes to avoid unnecessary contact with brake dust.

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1. IDENTIFICATION

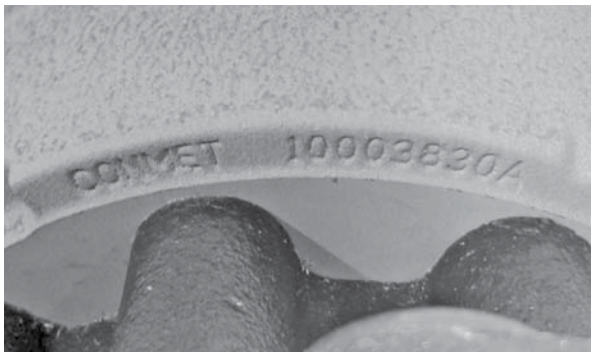
Wheel Hubs with ConMet Disc Brake Rotors

This manual contains general information on ConMet hub and rotor assemblies for air disc brake applications.

Identification

Before you perform any service procedures, you must first determine if the vehicle is equipped with a disc brake rotor designed and manufactured by ConMet.

ConMet rotors can be identified by part number. The part numbers are cast into the rotor as shown in figure 1 or stamped into the rotor as shown in figure 2.



106832a

Cast Rotor Part Number
FIGURE 1

106833a

Stamped Rotor Part Number
FIGURE 2

Use this part number to find the part specific service information in Section 4 of this manual.

2. INSPECTION

HAZARD ALERT MESSAGES

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ DANGER

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands.

⚠ WARNING

Some brake linings contain asbestos fibers, a cancer and lung disease hazard. Some brake linings contain non-asbestos fibers, whose long-term effects to health are unknown. Use caution when handling both asbestos and non-asbestos materials.

DISC BRAKE ROTOR INSPECTION

A disc brake component inspection should be a part of any pre-trip inspection and regularly-scheduled preventive maintenance program.

⚠ DANGER

Vehicles on jacks can fall, causing serious personal injury or property damage.

Never work under a vehicle supported by a jack without supporting the vehicle with stands and blocking the wheels. Wear safe eye protection.

Follow all shop safety procedures befor beginning vehicle inspection.

1. Lift and support the axles with safety stands. Refer to the vehicle manufacturer's recommended instructions.

2. Remove the wheels from the hub.

3. Rotate the hub and visually inspect both sides of the rotor for the Out of Service Conditions detailed in this section. If any of these conditions are found, remove the hub and replace the rotor according to the instructions in this manual.

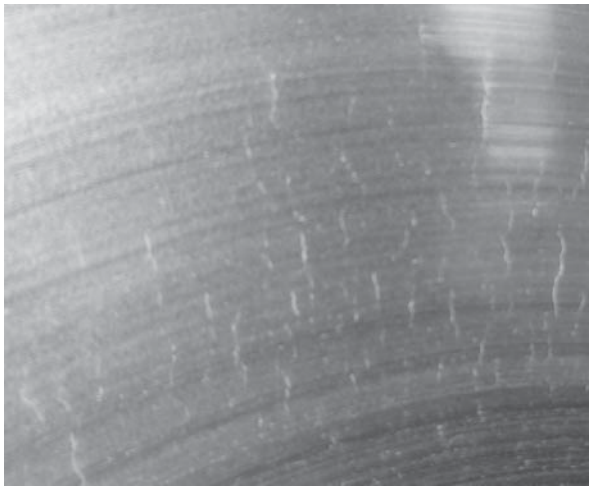
OUT OF SERVICE CONDITIONS

Heat Checks

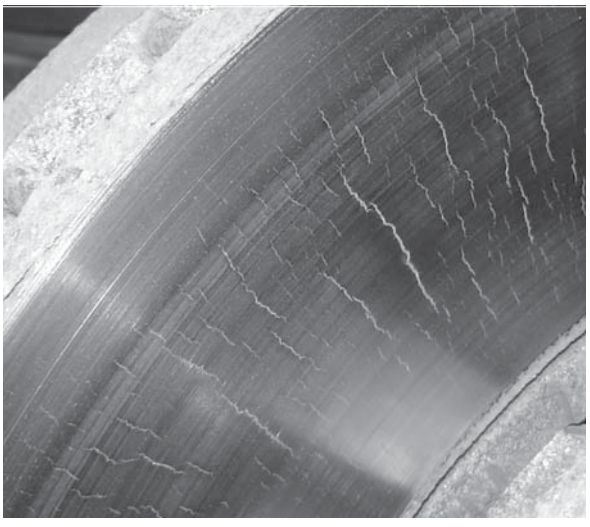
Heat checks are caused by the repeated heating and cooling of the braking surface. They appear as short, thin, radial interruptions in the braking surface. There may be numerous light and heavy heat checks on the braking surface. See figure 3 for examples of light heat checking and figure 4 for heavy heat checking.

Cracks

Heat checks may wear away or they may eventually become braking surface cracks. Rotors should be replaced if cracks become over 0.060" wide or over 0.060" deep and extend over 75% of the braking surface in the radial direction.



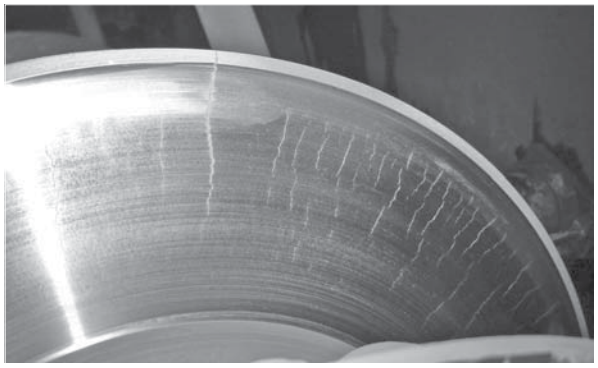
Light Heat Check
FIGURE 3



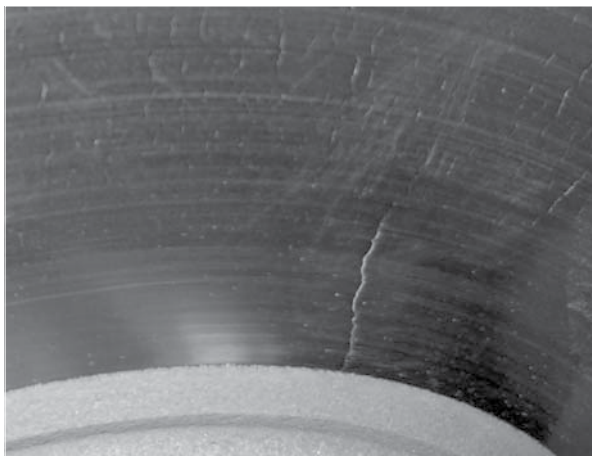
Heavy Heat Check
FIGURE 4

2. INSPECTION (CONTINUED)

Cracked rotors may be caused by mishandling, brake balance issues, wear beyond the minimum allowable thickness, or driver abuse. If a crack extends through a section of the rotor, the rotor should be replaced. If a crack is found on the mounting section of the rotor, the rotor should be replaced. Figure 5 shows a cracked rotor that should be replaced. The crack in figure 6 is acceptable to run, but the rotor should be inspected on a regular basis to ensure that the crack has not progressed.



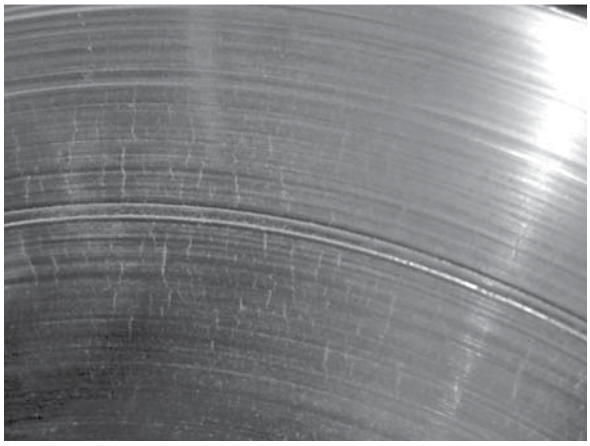
Unacceptable Crack
FIGURE 5



Acceptable Crack
FIGURE 6

Deep Grooves or Scoring

Grooves or scoring may be caused by contaminants trapped between the lining and the rotors, worn out linings, or the lining plate contacting the rotor. Grooves or scoring on the brake rotor are acceptable if they are less than 0.060" deep. If the rotor thickness, when measured across a groove, is less than the minimum allowable thickness for the rotor, the rotor should be replaced. See figure 7 for example of grooves on the braking surface of the rotor.



Grooves on Brake Surface
FIGURE 7

2. INSPECTION (CONTINUED)

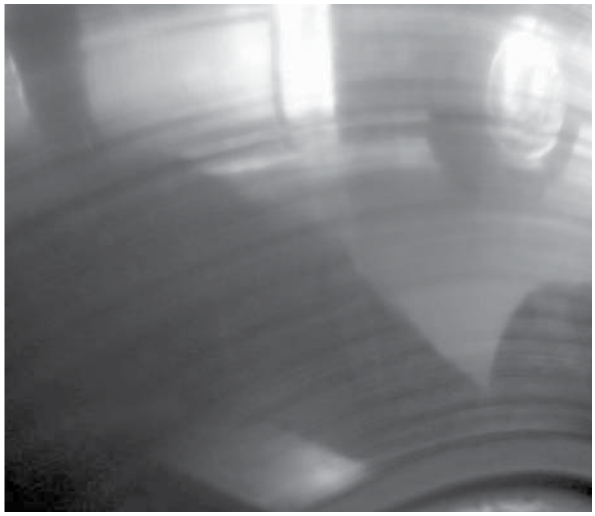
Blue Marks or Bands

If the rotor has become extremely hot, the braking surface may exhibit blue marks or bands. See figure 8 for examples of these marks. This condition may be caused by continued hard stops, improper brake balance, improper brake caliper clearance, operation, or adjustment. The cause of overheating should be determined and corrected. It is not necessary to replace the rotor as long as it meets the proper dimensional specifications for runout and thickness.

Blue Marks
FIGURE 8

Polished Rotors

A polished rotor will have a mirror-like finish on the braking surface. See figure 9. This condition may be caused by improper lining friction rating or a rotor resurfaced to too fine of a microfinish. To correct this condition, sand the braking surface on the rotor and the brake pads with 80 grit emery cloth. The microfinish should be 120 to 150 RMS. If the condition returns, verify that the linings on the brake pads have the correct friction rating for the application.



Polished Rotor
FIGURE 9

Martensite Spotted Rotors

Rotors subjected to extremely high heat followed by rapid cooling can exhibit a Martensite Spotted condition. This condition appears as black spots on the rotor that are slightly raised and are hard and brittle. See figure 10. The high temperatures cause a structural change to the rotor material. This condition can make the rotor more susceptible to cracking.

Rotors with this condition should be replaced. Check the brake linings for uneven wear and replace as necessary. After the rotor has been replaced, and the hub and rotor reinstalled onto the axle, the brake system should be checked for brake drag and proper brake balance.

Martensite Spotted Rotor
FIGURE 10

2. INSPECTION (CONTINUED)

Grease-Stained Rotors

Brake rotors that have discolorations due to grease or oil on the brake surface should be removed from the vehicle and cleaned to remove the grease or oil. See figure 11. The brake pads should be inspected and replaced if they are found to be soaked with grease or oil. The source of the grease or oil should be identified and repaired.

Grease-Stained Rotor
FIGURE 11

Lining Transfer

High operating temperatures or improper lining material can result in brake lining transfer onto the braking surface of the brake rotor. See figure 12. This may start as a spotty thin layer of lining material that has become welded to the brake rotor and may end up covering most of the braking surface. This condition will accelerate lining wear.

The buildup can be removed by resurfacing the brake rotor. Rotors should not be resurfaced to less than 0.060" above the minimum allowable thickness to allow for wear. The cause of the high brake operating temperature should be identified and corrected before the vehicle is put back into service.

Lining Transfer
FIGURE 12

Clogged or Restricted Vent Holes

Off-road and severe-duty applications may result in vent holes in the rotor becoming blocked by an accumulation of debris such as rocks or dirt. See figure 13. The vent holes should be cleaned as required to allow air flow and proper cooling of the brake rotor.

Clogged Vent Holes
FIGURE 13

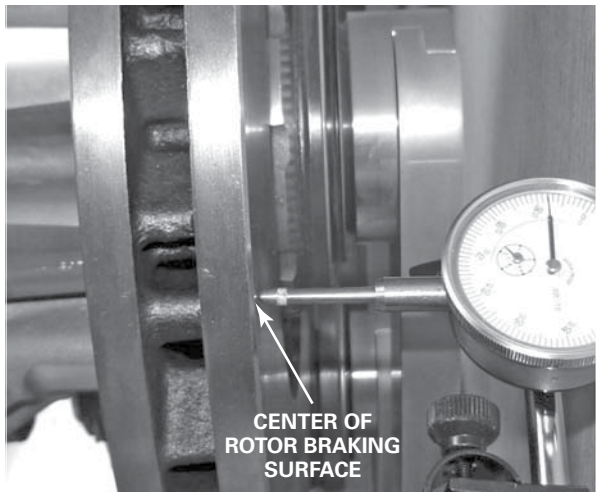
2. INSPECTION (CONTINUED)

Rotor Runout

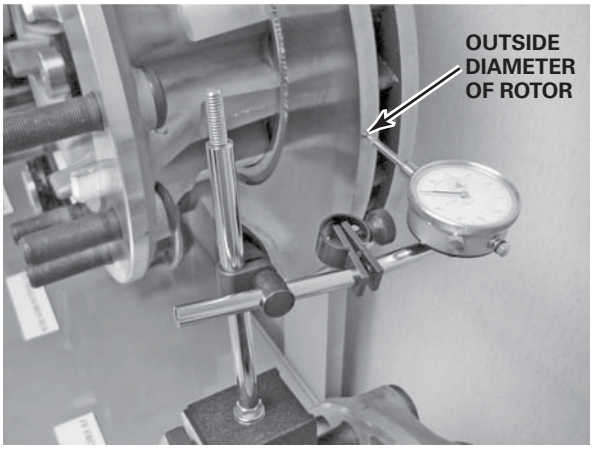
Lateral runout, or wobble, on the rotor braking surface should not exceed 0.020" in one full revolution of the rotor. The measurement should be taken with a dial indicator at the center of the rotor braking surface. See figure 14 for proper runout measurement set up.

The runout measurement should not include end play of the wheel bearings. If the runout measurement is over 0.020", the end play of the wheel bearings should be checked. If the wheel bearing end play is greater than the manufacturer's recommendations, the wheel bearings should be adjusted per the manufacturer's recommendations.

Radial runout on the outside diameter of the braking surface should not exceed 0.035" when checked with a dial indicator. See figure 15. If the runout exceeds 0.035", the rotor should be replaced.



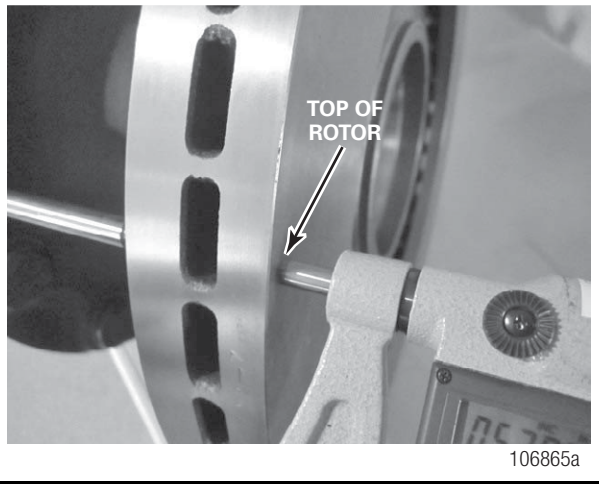
Lateral Runout
FIGURE 14



Radial Runout
FIGURE 15

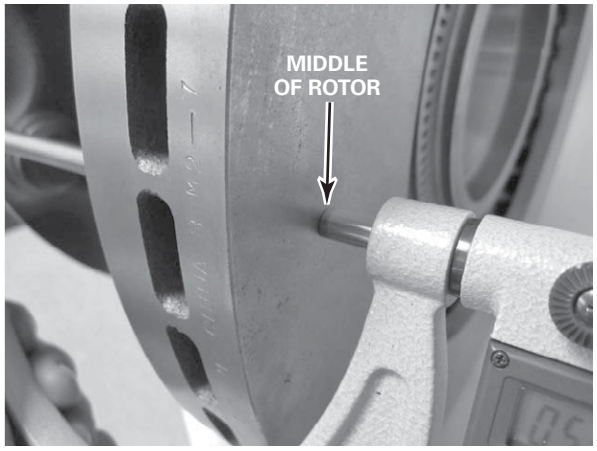
Rotor Thickness

The rotor thickness should be measured at three points using a micrometer as shown in figures 16, 17 and 18. If the rotor thickness varies more than 0.005" between any two places, the rotor should be replaced.

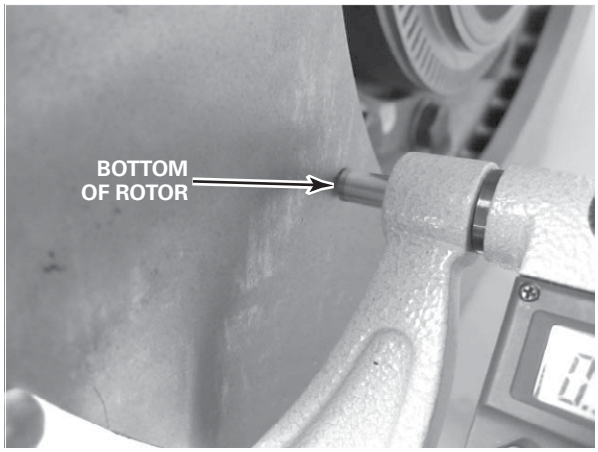


Top of Rotor
FIGURE 16

2. INSPECTION (CONTINUED)



Middle of Rotor
FIGURE 17



Bottom of Rotor
FIGURE 18

Rotor Resurfacing

ConMet does not recommend resurfacing disc brake rotors. However, if rotor resurfacing is necessary, be sure that at least 0.060" of material is left above the rotor minimum thickness specification to allow for wear before the minimum allowable rotor thickness is reached.

3. HUB AND ROTOR REMOVAL

HAZARD ALERT MESSAGES

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ DANGER

Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving.

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenanace or service.

HUB AND ROTOR REMOVAL

1. Lift the axle and support it with safety stands. Refer to the vehicle manufacturer's recommended instructions.
2. Remove the tires and wheels.
3. Remove the hubcap or drive axle. Refer to the manufacturer's recommended instructions.
4. Follow the brake manufacturer's instructions to remove the brake caliper and brake pads from the axle mounting point.

⚠ WARNING

Do not loosen the axle spindle nuts by either striking them directly with a hammer, or striking a drift or chisel placed against them. Damage to the parts will occur causing possible loss of axle wheel-end components and serious personal injury.

5. Remove the spindle nut assembly.
6. Slide the hub and rotor assembly off the spindle. Be careful not to damage the outer bearing.
7. Remove the bolts that secure the rotor to the hub. Be careful not to damage the ABS tone ring when the rotor is removed.
8. Remove the seal from the hub.
9. Clean the bearing cups and cones, bearing spacer, grease cavity, and seal bore of the hub.
10. Inspect all components for signs of wear or damage. Replace components as necessary.
11. Clean the spindle. It may be necessary to remove the inner portion of the seal from the spindle. If necessary, use emery cloth to remove rust and foreign material from the seal journal on the spindle.
12. Clean the rotor mounting area of the hub.

4. DISC BRAKE ROTOR REPLACEMENT

HAZARD ALERT MESSAGES

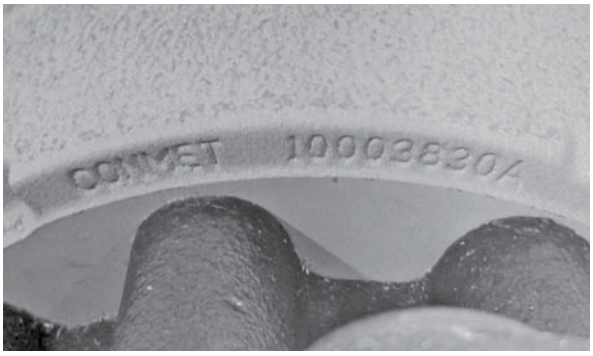
Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING

Do not hit steel parts with a steel hammer. Pieces of a part can break off. Serious personal injury and damage to components can result. Use a brass or synthetic mallet for assembly and disassembly procedures.

PART IDENTIFICATION

The brake rotor can be identified by the part number that is cast or stamped into the rotor. Use the brake rotor part number to find the specific replacement instructions for the hub and rotor assembly you are working on.



106832a

Cast Part Number
FIGURE 19

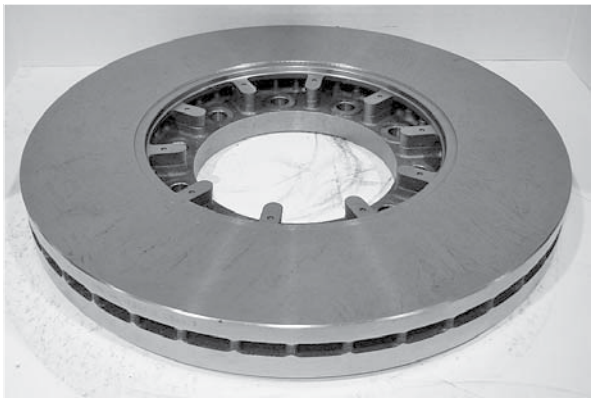
106848a

Stamped Part Number
FIGURE 20

4. DISC BRAKE ROTOR REPLACEMENT (CONTINUED)

ROTOR REPLACEMENT PROCEDURES

ConMet Flat Rotor 10016195
Service Kit Part Number 10018609
Rotor Minimum Thickness 1.65" (41.9 mm)



Flat Rotor
FIGURE 21

NOTE

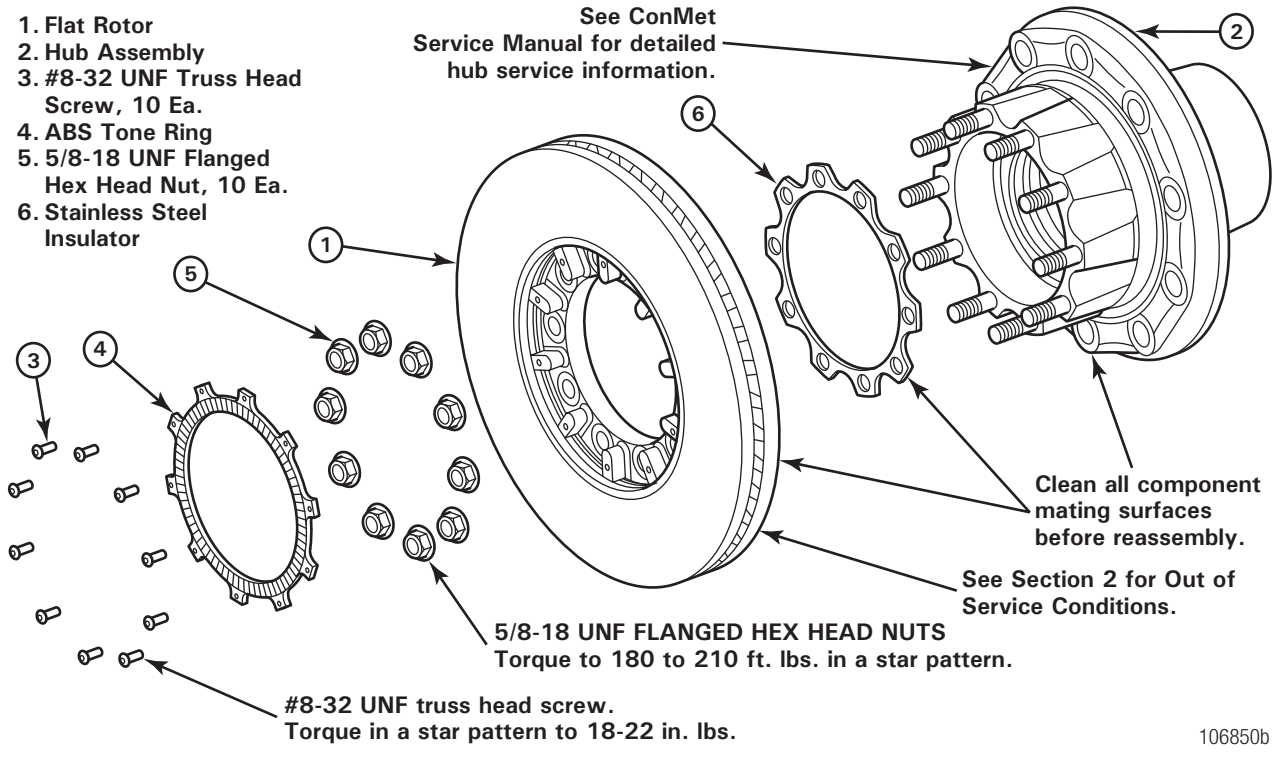
Install the brake rotor using only the hardware provided in the rotor kit.

1. If the studs were removed, apply Loctite® 272 to the coarse threaded end of the double-ended stud and to the rotor mounting threads in the hub. Install the studs. Clean all mating surfaces.

NOTE

If Loctite® 272 is not available, use Loctite® 262.

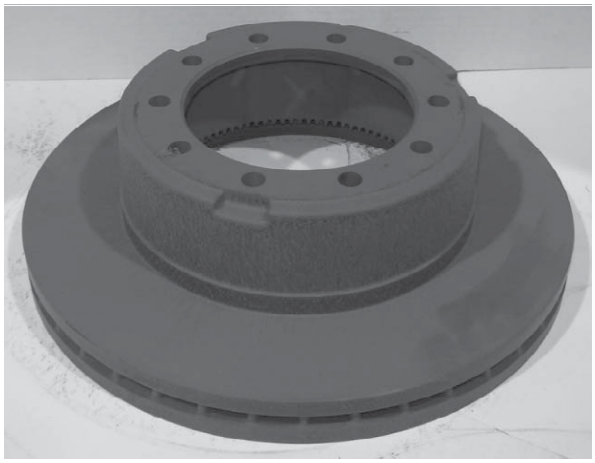
2. Clean all mating surfaces.
3. Place the steel insulator and rotor on the hub.
4. Install and torque the rotor mounting bolts in a star pattern to 180 to 210 ft. lbs.
5. Place the ABS tone ring on the rotor.
6. Install and torque the #8-32 UNF truss head screws in a star pattern to 18 to 22 in. lbs.


1. Flat Rotor
2. Hub Assembly
3. #8-32 UNF Truss Head Screw, 10 Ea.
4. ABS Tone Ring
5. 5/8-18 UNF Flanged Hex Head Nut, 10 Ea.
6. Stainless Steel Insulator
See ConMet Service Manual for detailed hub service information.
Clean all component mating surfaces before reassembly.
See Section 2 for Out of Service Conditions.
5/8-18 UNF FLANGED HEX HEAD NUTS
Torque to 180 to 210 ft. lbs. in a star pattern.
#8-32 UNF truss head screw.
Torque in a star pattern to 18-22 in. lbs.
106850b

Rotor Installation
FIGURE 22

4. DISC BRAKE ROTOR REPLACEMENT (CONTINUED)

ConMet Hat-Shaped Rotor 10003830
Service Kit Part Number 10030921
Rotor Minimum Thickness 1.32" (33.5 mm)

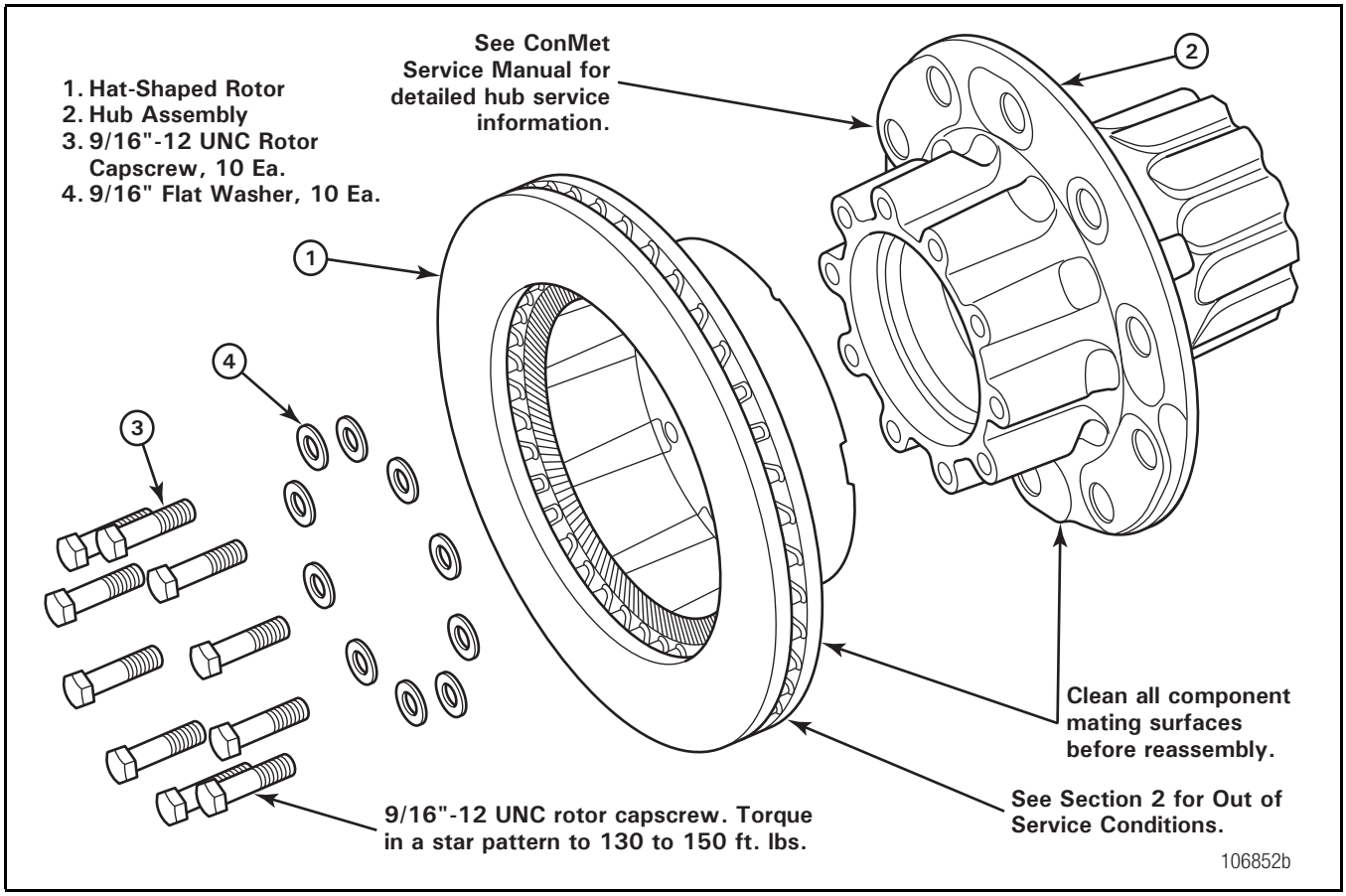


ConMet Hat-Shaped Rotor
FIGURE 23

NOTE

Install the brake rotor using only the hardware provided in the kit.

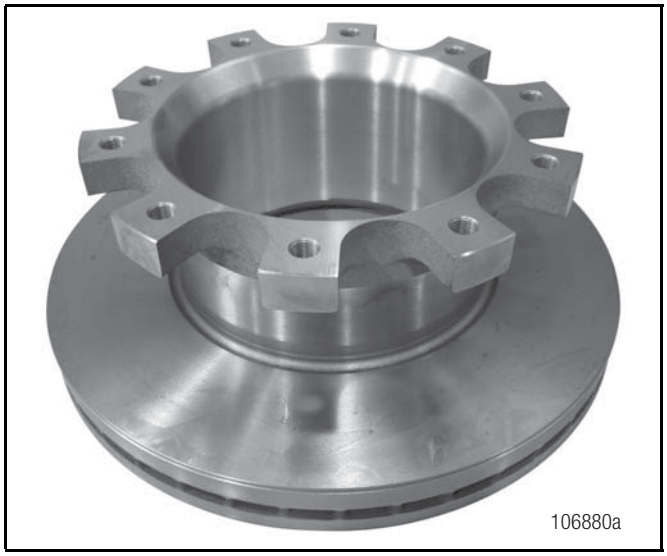
1. Clean the rotor mounting surface on the hub and position the disc brake rotor onto the hub.
2. Install and torque the rotor capscrews in a star pattern to 130 to 150 ft. lbs.


1. Hat-Shaped Rotor
2. Hub Assembly
3. 9/16"-12 UNC Rotor Capscrew, 10 Ea.
4. 9/16" Flat Washer, 10 Ea.
See ConMet Service Manual for detailed hub service information.
1
2
3
4
Clean all component mating surfaces before reassembly.
See Section 2 for Out of Service Conditions.
9/16"-12 UNC rotor capscrew. Torque in a star pattern to 130 to 150 ft. lbs.
106852b

Rotor Installation
FIGURE 24

4. DISC BRAKE ROTOR REPLACEMENT (CONTINUED)

ConMet U-Shaped Rotor 10020109
Service Kit Part Number 10020682
Rotor Minimum Thickness 1.46" (37.0 mm)



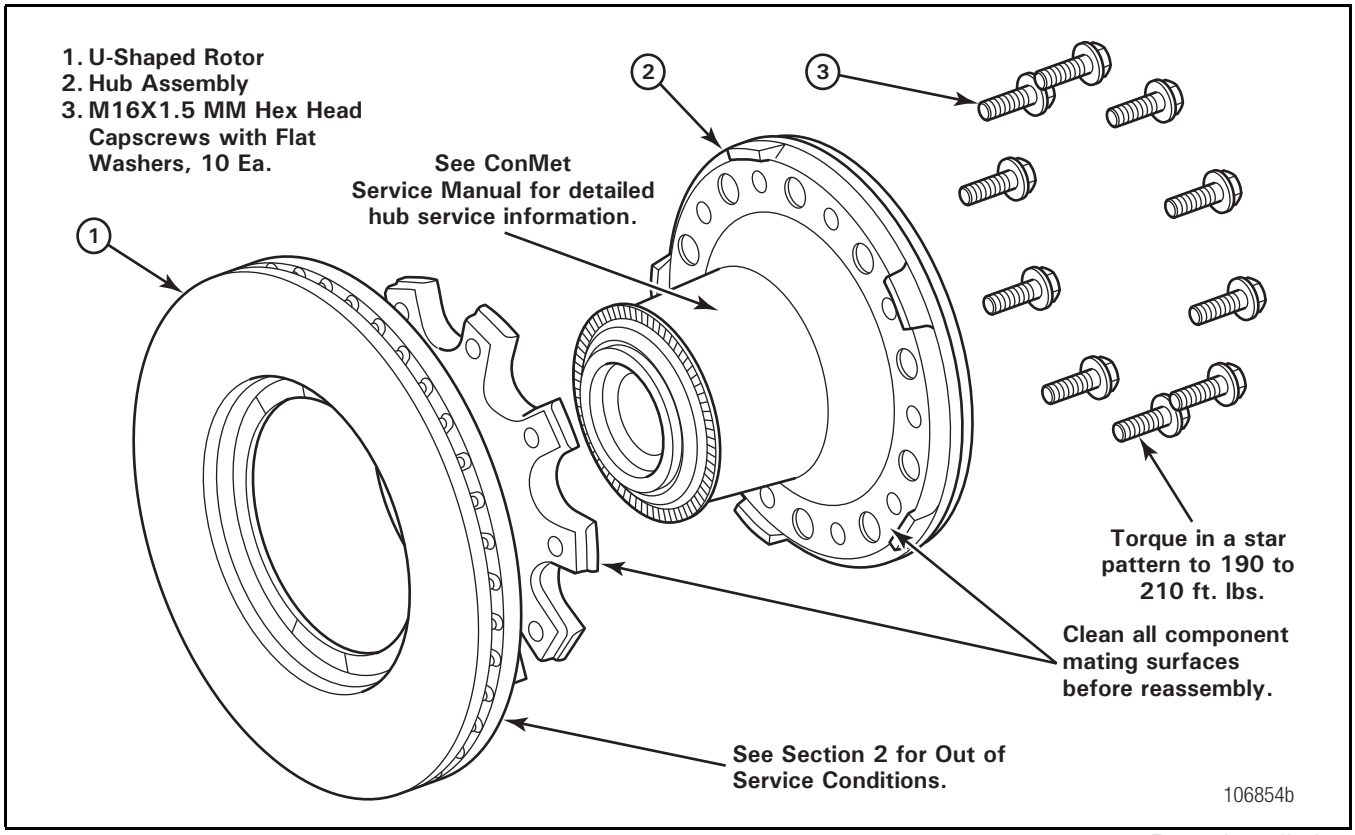
ConMet U-Shaped Rotor
FIGURE 25

NOTE

Install the brake rotor using only the hardware provided in the brake rotor kit.

1. Clean the mounting surfaces on the hub and place the disc brake rotor onto the hub. Install the disc brake rotor using the hardware provided in the brake rotor kit.

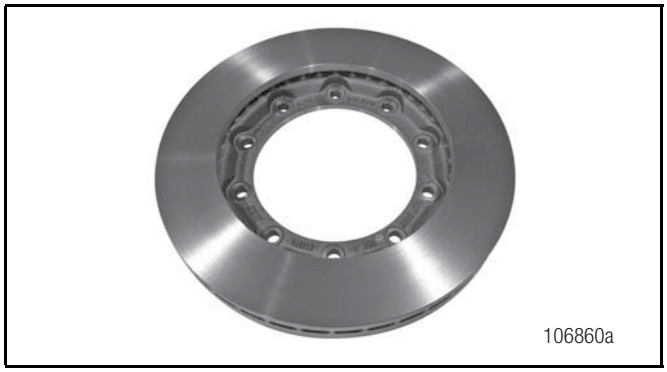
2. Install and torque the rotor capscrews in a star pattern to 190 to 210 ft. lbs.


1. U-Shaped Rotor
2. Hub Assembly
3. M16X1.5 MM Hex Head Capscrews with Flat Washers, 10 Ea.
See ConMet Service Manual for detailed hub service information.
1
2
3
Torque in a star pattern to 190 to 210 ft. lbs.
Clean all component mating surfaces before reassembly.
See Section 2 for Out of Service Conditions.
106854b

Rotor Installation
FIGURE 26

4. DISC BRAKE ROTOR REPLACEMENT (CONTINUED)

ConMet Flat Rotor 10019996
Service Kit Part Number 10020611
Rotor Minimum Thickness 1.42" (36.1 mm)



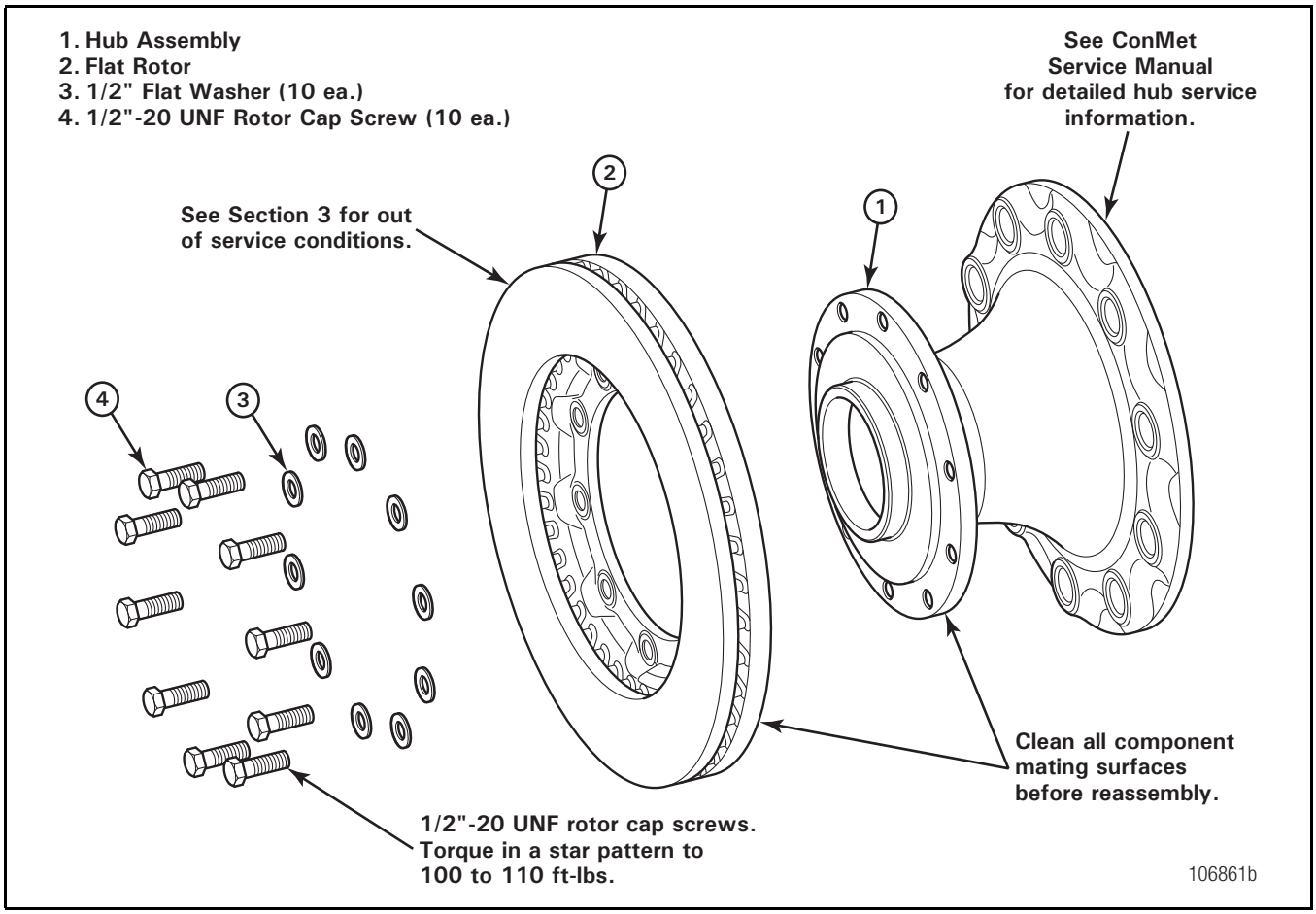
ConMet Medium Duty Flat Rotor
FIGURE 27

NOTE

Install the brake rotor using only the hardware provided in the brake rotor kit.

1. Clean the rotor mounting surface on the hub and position the disc brake rotor on to the hub.

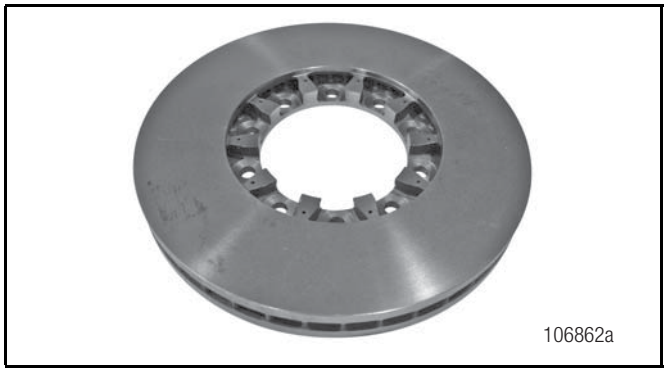
2. Install and torque the rotor capscrews in a star pattern to 100 to 110 ft. lbs.


1. Hub Assembly
2. Flat Rotor
3. 1/2" Flat Washer (10 ea.)
4. 1/2"-20 UNF Rotor Cap Screw (10 ea.)
See ConMet Service Manual for detailed hub service information.
See Section 3 for out of service conditions.
2
1
4
3
Clean all component mating surfaces before reassembly.
1/2"-20 UNF rotor cap screws. Torque in a star pattern to 100 to 110 ft-lbs.
106861b

Rotor Installation
FIGURE 28

4. DISC BRAKE ROTOR REPLACEMENT (CONTINUED)

ConMet Flat Rotor 10009970
Service Kit Part Number 10016390
Rotor Minimum Thickness 1.65" (41.9 mm)



ConMet Medium Duty Flat Rotor
FIGURE 29

NOTE

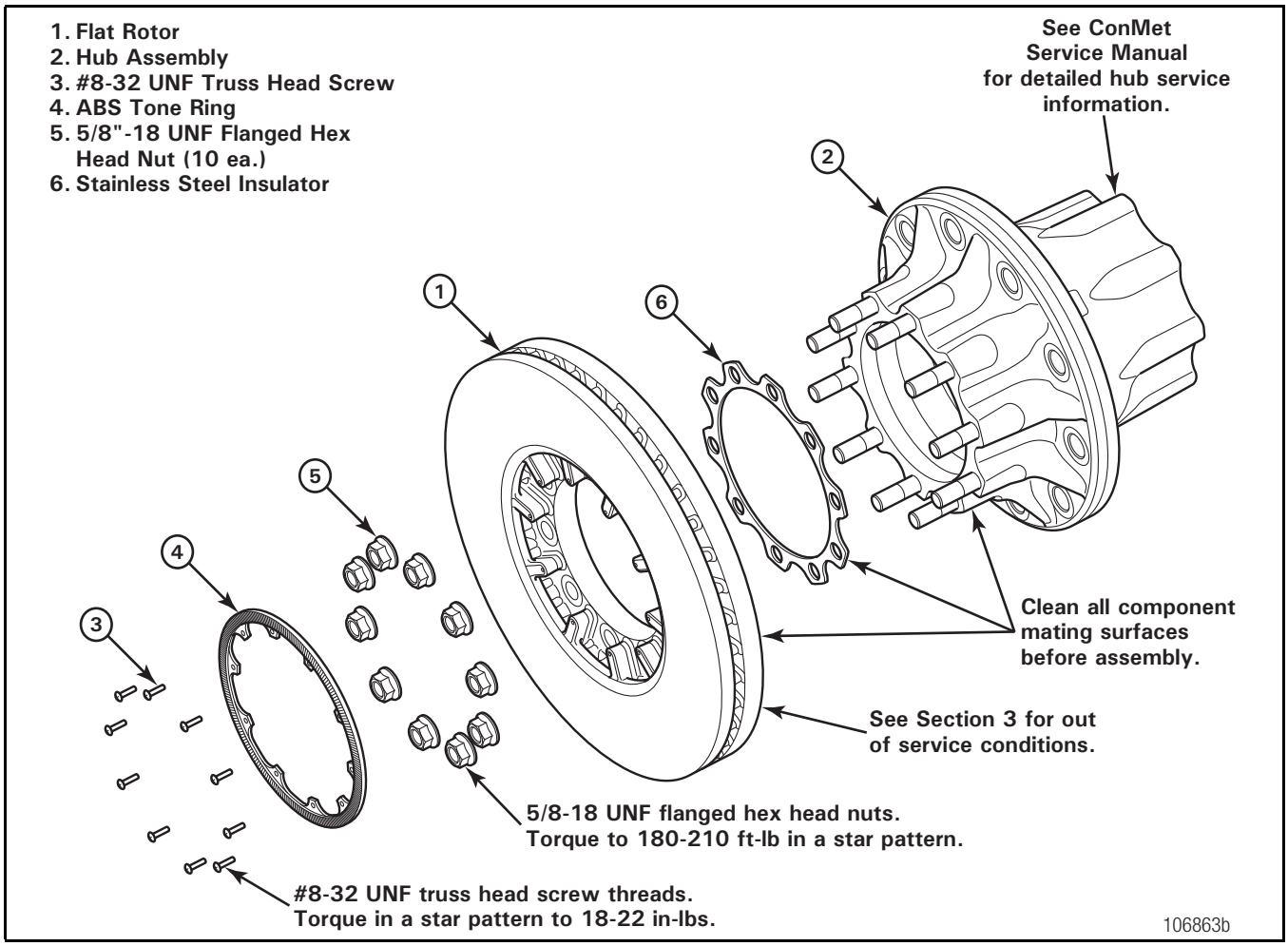
Install the brake rotor using only the hardware provided in the brake rotor kit.

1. If the rotor mounting studs were removed from the hub during disassembly, apply Loctite® 272 to the coarse end of the double-ended stud and to the rotor mounting threads in the hub. Install the studs.

NOTE

If Loctite® 272 is not available, use Loctite® 262.

2. Clean all mating surfaces.
3. Place the steel insulator and the rotor on the hub.
4. Install and torque the rotor mounting nuts in a star pattern to 180-210 ft. lbs.
5. Place the ABS ring on the rotor.
6. Install and torque the #8-32 UNF truss head screws in a star pattern to 18 to 22 in. lbs.


1. Flat Rotor
2. Hub Assembly
3. #8-32 UNF Truss Head Screw
4. ABS Tone Ring
5. 5/8"-18 UNF Flanged Hex Head Nut (10 ea.)
6. Stainless Steel Insulator
See ConMet Service Manual for detailed hub service information.
Clean all component mating surfaces before assembly.
See Section 3 for out of service conditions.
5/8-18 UNF flanged hex head nuts. Torque to 180-210 ft-lb in a star pattern.
#8-32 UNF truss head screw threads. Torque in a star pattern to 18-22 in-lbs.
106863b

Rotor Installation
FIGURE 30

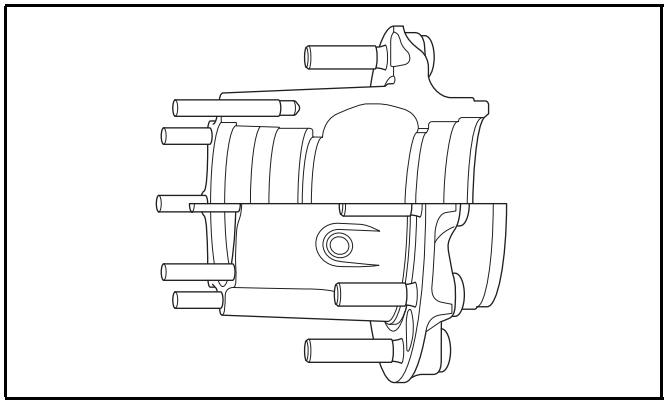
5. REINSTALLATION

IDENTIFYING HUB TO BE INSTALLED

Before reinstalling the ConMet hub, it is very important to identify the correct hub. Below are ConMet's three types of hubs:

ConMet Standard Wheel Hubs

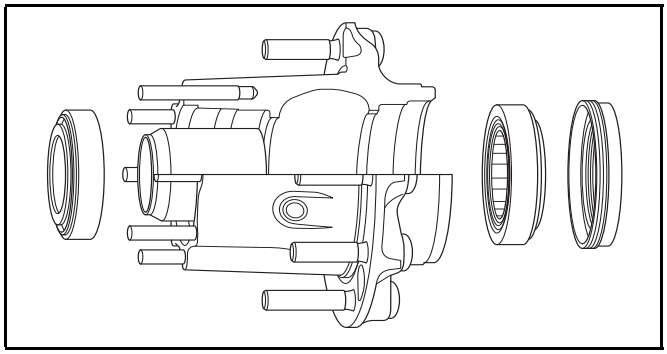
For instructions on installing ConMet's standard hub (see figure 31), proceed to the next page.



Standard Hub
FIGURE 31

PreSet Wheel Hubs

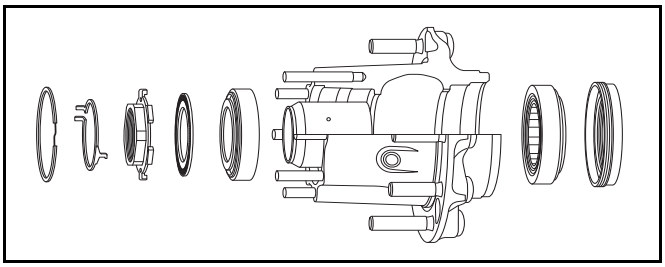
For instruction on reinstalling ConMet's PreSet hub assemblies (see figure 32), proceed to page 16.



PreSet Hub Assembly
FIGURE 32

PreSet Plus Wheel Hubs

For instruction on reinstalling ConMet's PreSet Plus hub assemblies (see figure 33), proceed to page 17.



PreSet Plus Hub Assembly
FIGURE 33

5. REINSTALLATION – CONMET STANDARD WHEEL HUBS

INSTALLING ConMet STANDARD WHEEL HUBS

NOTE

See TMC RPG18 for more details regarding installation of wheel hubs with manually adjusted bearing systems.

1. Lubricate the bearings with clean lubricant of the same type used in the axle sump or hub assembly.

2. Install the wheel hub and bearing onto spindle and torque the inner adjusting nut to 200 ft-lbs while rotating the hub assembly.

3. Back off the inner adjusting nut one full turn. Rotate the hub.

4. Re-torque the inner adjusting nut to 50 ft-lbs while rotating the wheel hub assembly.

5. Back off the inner adjustment nuts as per chart below.

Axle Type	Threads per inch	Final Back Off
Steer (front non-drive)	12	1/6 turn*
	18	1/4 turn*
	12	1/3 turn
	14	1/2 turn
	18	
Drive	12	1/4 turn
	16	1/4 turn
Trailer**	12	1/4 turn
	16	1/4 turn

*If dowel pin and washer (or washer tang and nut flat) are not aligned, remove the washer, turn it over, and reinstall. If required, loosen the inner (adjusting) nut just enough for alignment.

**Bendable type washer lock only: Secure nuts by bending one wheel nut washer tang over the inner and outer nut. Bend the tangs over the closest flat perpendicular to the tang.

6. Install the locking washer.

7. Install and torque the outer jam nut as per chart on next page.

Axle Type	Nut Size	Torque Specs
Steer (front non-drive)	Install cotter pin to lock axle nut in position	
	Less than 2-5/8" (66.7 mm)	200-300 ft-lbs (271-407 mm)
Drive	Dowel Type Washer	300-400 ft-lbs (407-542 mm)
	Tang Type Washer**	200-275 ft-lbs (271-373 mm)
Trailer***	2-5/8" (66.7 mm) and over	200-300 ft-lbs (271-407 mm)

*Single Nut

**Positive adjustment wheel bearings (a product of Rockwell International), use 250-300 ft-lbs on adjusting nut and jam nut. See Rockwell Field Maintenance Manual No. 14.

***For single axle (13,000-19,000 lb capacity) with tang washers, consult manufacturer's specifications.

8. Use a dial indicator to verify acceptable endplay of 0.001"-0.005".

NOTE

If end play is not within specification, readjustment is required. Be sure to install or activate any locking device.

Caliper Installation

1. Reinstall and adjust the brake pads and brake caliper according to the brake manufacturer's recommended instructions.

2. Reinstall the wheels and torque the wheel bolts in a star pattern to 450-500 ft. lbs. The last nut rotation must be with a torque-controlled device.

3. After the first 50 to 100 miles, retorque the wheel nuts to 450-500 ft. lbs. in a star pattern. The last nut rotation must be with a torque-controlled device.

5. REINSTALLATION – PRESET WHEEL HUBS

INSTALLING THE PreSet WHEEL HUB ASSEMBLY

⚠CAUTION

On the ball seat wheel mounting system, always use left-handed threaded studs, which are gold in color and have an “L” stamped on the end, in the hub on the driver’s side of the equipment, and use right-handed threaded studs, which are silver in color and have an “R” stamped on the end, in the hub on the passenger’s side of the equipment. The ConMet part number is located on the head of the stud. The same part number must be used for replacement unless changing the drum or wheel type.

Spindle Preparation

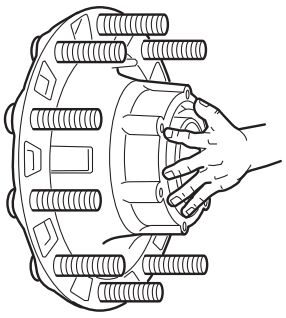
1. **Clean the spindle** to remove any lubricant, corrosion prevention coating, foreign material, or surface rust that may be present.
2. **Lubricate the bearing journals on the spindle,** or the inside diameter of the bearing cones with Grade 2 grease or the lubricant that will be used in the wheel end. Do not coat the seal journal on the spindle.
3. **Lubricate the inside diameter of the seal** with the same lubricant that will be used in the wheel end.

⚠CAUTION

Failure to apply lubricant to the bearing journals will result in fretting corrosion, which may result in difficulty removing the bearing. Never support the hub on the spindle with just the inner bearing and seal. This can damage the seal and cause premature failure, i.e., by cocking the seal in the bore.

Mounting the Hub

4. Mount the hub assembly onto the axle spindle with a smooth, firm motion while holding the outer bearing in place. Use care to maintain alignment between the bearing cones, spacer, and spindle and to avoid seal damage (see figure 34).



Mounting the Assembly
FIGURE 34

⚠CAUTION

Once the hub is on the spindle, do not remove the outer bearing. Removing the outer bearing may cause the seal to become misaligned, resulting in premature seal failure.

Spindle Nut Torque

5. a. One-Piece Spindle Nut System (Pro-Torq® and Axilok®)

   For one-piece spindle nut systems like the Pro-Torq® or Axilok®, torque the nut to a minimum of 300 ft. lbs. **Do not back off the spindle nut**. Engage any locking device that is part of the spindle nut system. If the locking device cannot be engaged when the nut is at 300 ft. lbs., advance the nut until engagement takes place and the nut is locked.

   b. Double Nut or Jam Nut System

   If a double nut or jam nut system is being used, torque the inner nut to 300 ft. lbs. **Do not back off the spindle nut**. Advance the inner nut as necessary to install the locking ring. Install the outer nut with 200 ft. lbs. of torque. **Be sure to engage any locking device**.

NOTE

ConMet does not recommend a one-piece "castellated" type nut system for use with PreSet hubs.

NOTE

The hubcap bolt holes must be free of debris, such as silicone gasket sealer to ensure the bolts will tighten properly to avoid leaks. Silicone trapped in the hubcap screw holes can create hydraulic pressures during hubcap screw installation, leading to premature hub failure through the hubcap holes. The vent should also be clean and free of debris. Remove any burrs or sharp edges. Always use new gaskets.

6. **Install the hub cap or drive axle with a new gasket.** Torque the hub cap bolts in a star pattern to 12 to 18 ft-lbs. Torque the drive axle bolts or nuts per the drive axle manufacturer’s recommendation. A ConMet PreSet Plus hub cap is required for trailer hubs not equipped with tire inflation systems to maintain the warranty.

NOTE

Use SAE Grade 5 bolts or stronger. Do not use star washers. Use only flat washers or split washers.

5. REINSTALLATION – PRESET WHEEL HUBS (CONTINUED)

Caliper Installation

1. Reinstall and adjust the brake pads and brake caliper according to the brake manufacturer's recommended instructions.

2. Reinstall the wheels and torque the wheel bolts in a star pattern to 450-500 ft. lbs. The last nut rotation must be with a torque-controlled device.

3. After the first 50 to 100 miles, retorque the wheel nuts to 450-500 ft. lbs. in a star pattern. The last nut rotation must be with a torque-controlled device.

REINSTALLATION – PRESET PLUS WHEEL HUBS

INSTALLING THE PreSet Plus WHEEL HUB ASSEMBLY

⚠ WARNING

Failure to fill the hub with the correct amount of lubricant can cause premature failure of the PreSet Plus hub assembly, which, if not avoided, could result in death or serious injury.

NOTE

Use the proper hubcap for the type of lubricant intended to be used.

1. **Clean the spindle** to remove any lubricant, corrosion prevention coating, foreign material, or surface rust that may be present.
2. **Lubricate the bearing journals on the spindle,** or the inside diameter of the bearing cones with Grade 2 grease or the lubricant that will be used in the wheel end. Do not coat the seal journal on the spindle.
3. **Lubricate the inside diameter of the seal** with the same lubricant that will be used in the wheel end.
4. If present, remove the red locking snap ring from the spindle nut. Verify that the bearing spacer is in proper alignment. Align the key or flat on the washer with the keyway or flat on the spindle as the hub is placed onto the spindle. **Use a smooth firm motion and place the hub onto the spindle.** When the threads on the nut engage the threads on the spindle, rotate the nut in a clockwise direction to fully engage the threads.
5. Torque the spindle nut to the following torque values:

Steer Hub – Torque the spindle nut to 300 ft-lbs while rotating the hub. **DO NOT BACK OFF THE SPINDLE NUT.**

Drive Hub or Trailer Hub – Torque the spindle nut to 500 ft-lbs while rotating the hub. **DO NOT BACK OFF THE SPINDLE NUT.**

Socket Sizes for PreSet Plus Spindle Nuts

	FF Flat	FF Keyway	FL	R	TN	TP
Socket Size (6 Point)	2"	2"	2.75"	3.75"	3.125"	4"

6. **Visually examine the three holes in the face of the spindle nut. One of the holes will line up with the holes in the inner washer. Install the tab of the red locking snap ring through the hole in the nut and washer that are aligned. Spread the locking ring, push it over the spindle nut and in to the machined grooves in the spindle nut.** Use caution not to bend the locking ring permanently. If the locking ring is damaged or bent, replace it with a new one.
7. **Install the hub cap or drive axle with a new gasket.** Torque the hub cap bolts in a star pattern to 12 to 18 ft-lbs. Torque the drive axle bolts or nuts per the drive axle manufacturer's recommendation. A ConMet PreSet Plus hub cap is required for trailer hubs not equipped with tire inflation systems to maintain the warranty.

Caliper Installation

1. Reinstall and adjust the brake pads and brake caliper according to the brake manufacturer's recommended instructions.
2. Reinstall the wheels and torque the wheel bolts in a star pattern to 450-500 ft. lbs. The last nut rotation must be with a torque-controlled device.
3. After the first 50 to 100 miles, retorque the wheel nuts to 450-500 ft. lbs. in a star pattern. The last nut rotation must be with a torque-controlled device.

6. LUBRICATION

DRIVE HUB LUBRICATION

Drive hubs can be lubricated by installing one quart of oil through the fill plug in the barrel of the hub.

⚠CAUTION

The proper installation torque for the fill plug is 20-25 ft-lbs.

If no fill plug is present, the drive hub can be lubricated by lifting the opposite side of the axle 8" to allow the lubricant to run down the axle housing and into the hub assembly. Elevate the axle for two minutes to allow the lubricant time to fill the hub. Repeat the process for the opposite side of the vehicle. The rear axle carrier should be filled to the proper level to ensure adequate lubricant is available to fill the entire hub. Refill the carrier to the proper level after this procedure is completed.

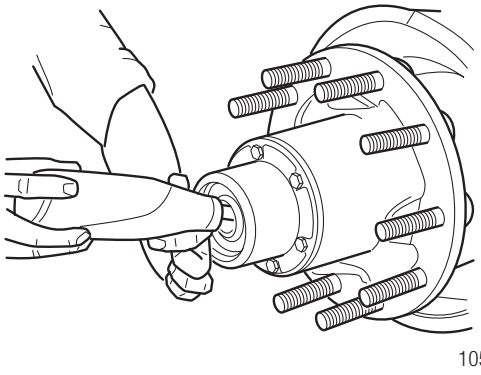
STEER AND TRAILER HUBS WITH OIL LUBRICANT

NOTE

Only use oil approved by the seal manufacturer (see approved list from the seal manufacturer or on www.conmet.com).

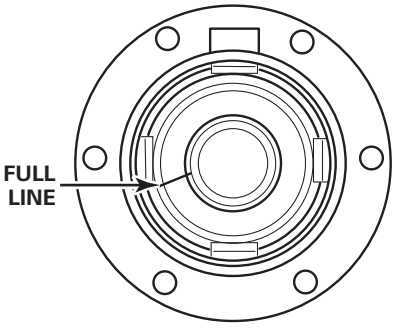
Some hubs are provided with a fill hole, located in the barrel and between the bearings for adding lubricant.

1. Fill the hub through the hubcap or the fill hole with oil. It may be necessary to add lubricant more than once to adequately fill the hub (see figure 35).



Filling the Hub with Oil
FIGURE 35

2. Be certain the hubcap is properly filled to the “oil level” mark on the face of the cap (see figure 36). Allow the initial fill amount to settle for 10 minutes. Repeat the fill procedure until the oil is at the fill line on the hubcap.



Fill to “Oil Level Line”
FIGURE 36

3. Be sure to put the fill hole plug back into the hubcap and that the vent is working properly.

TRAILER HUBS WITH SEMI-FLUID GREASE LUBRICANT

⚠CAUTION

If you are using semi-fluid grease in trailer applications, special procedures must be followed as outlined in the “Semi-Fluid Grease Lubricant” section.

⚠WARNING

Failure to fill and maintain the hub with the correct amount of semi-fluid grease may cause premature failure of the wheel hub system, bearing failure and possible loss of the wheel.

1. Remove the fill hole plug.

2. Loosen the hubcap bolts to allow air to escape while the hub is filling.

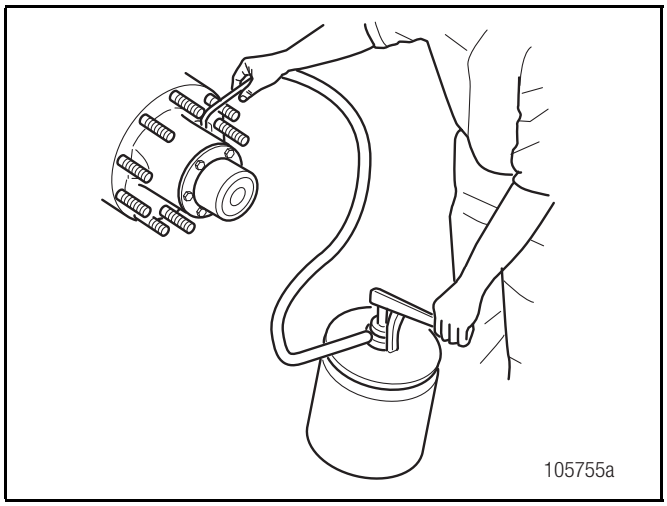
3. Fill the hub with the OEM recommended amount of room temperature (60°F minimum) semi-fluid grease through the fill hole in the hub (see figure 37).

   For proper fill levels using semi-fluid grease, see the following chart.

6. LUBRICATION (CONTINUED)

HUB TYPE	MATERIAL	BRAKE TYPE	NO. OF STUDS	CASTING NUMBERS**	VOLUME* (FL.OZ.)
TN	Aluminum	Disc	10	10017979	19
TN	Aluminum	Disc	10	10001896	19
TN	Aluminum	Drum	10	102035	19
TN	Aluminum	Drum	8	102610	19
TN	Aluminum	Drum	10	100164	23
TN	Aluminum	Drum	8	101143	23
TN	Iron	Drum	10	10023666	23
TN	Iron	Drum	10	10003636	27
TP	Aluminum	Disc	10	10016225	42
TP	Aluminum	Disc	10	10016620	47
TP	Aluminum	Drum	10	10001216	42
TP	Aluminum	Drum	10	100510	42
TP	Aluminum	Drum	8	101259	42
TP	Iron	Disc	10	10009758	55
TP	Iron	Drum	10	10025633	35
TP	Iron	Drum	10	10003654	55

*These fill volumes were established with ConMet hubcaps and are to be used as reference only.
**Hub casting numbers can be found cast onto the flange of the hub. For part numbers that don't appear in the chart, contact ConMet customer service at 800-547-9473.



Filling Hub with Semi-Fluid Grease
FIGURE 37

4. Retorque the hubcap bolts to 12-18 ft. lbs.

5. Reinstall and tighten the fill plug to 20-25 ft. lbs.

7. WHEEL INSTALLATION

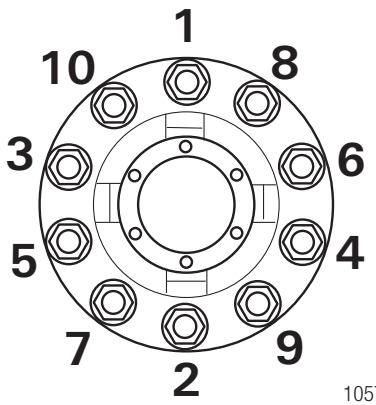
Hub Pilot Wheel Mounting System

NOTE

If your shop practice requires the use of lubricant or anticorrosion material to the threads, avoid getting lubricant on the flat mating surfaces of the hub and wheels.

⚠ WARNING

Always snug the top nut first. See the adjacent diagram for bolt tightening sequence, and tighten in order from 1 through 10, depending on the bolt pattern (see figure 38).



10 Stud Tightening Sequence
FIGURE 38

1. Clean all mating surfaces on the hub and nuts. Remove loose paint, scale, and any material building around the pilots of the hub and wheels. Be sure paint is fully cured on recently refurbished wheels.

⚠ CAUTION

Care should be taken to avoid damaging the hub or other components.

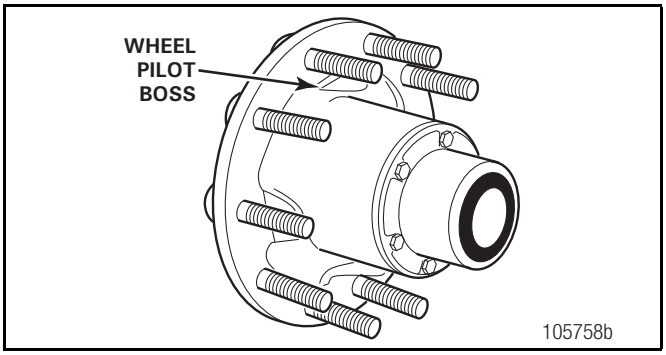
2. In environments where a corrosion inhibitor is beneficial, ConMet recommends the use of Corrosion Block, a product of Lear Chemical Research, (905) 564-0018. In severely corrosive environments, a light coat of Corrosion Block on the wheel pilots has proven beneficial.

3. In addition to the above preparation, apply two drops of oil to a point between the nuts and nut flange washer and two drops to the last two or three threads at the end of each stud. Also, lightly lubricate the pilots on the hub to ease wheel installation and removal.

⚠ CAUTION

Do not get lubricant on the mounting face of the wheel. Failure to clean lubricant from these surfaces may result in decreased clamping load.

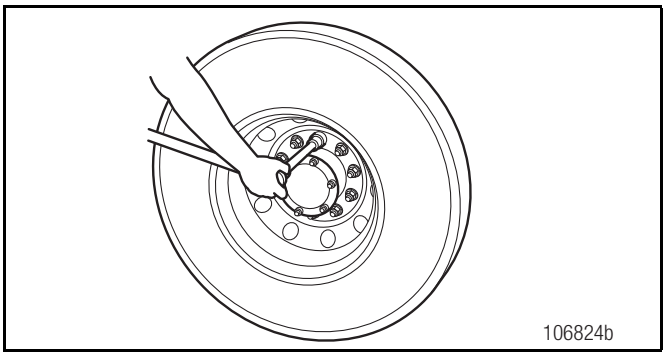
4. Before installation of wheels that utilize the hub piloted system, rotate the hub so one of the wheel pilot bosses is at the top (12 o'clock position) (see figure 39).



Rotating the Hub
FIGURE 39

5. Place the wheel(s) into position. One or more nuts can be started in order to hold wheel(s) into position.

6. Snug the top nut first. Apply 50 ft. lbs. torque to draw the wheel up fully against the hub (see figure 40).



Reinstalling the Wheel
FIGURE 40

7. Install the remaining wheel nuts and using the sequence as shown, torque all the nuts to 50 ft. lbs., then retorque to 450-500 ft. lbs. (see figure 38). The last nut rotation must be with a calibrated torquing device.

7. WHEEL INSTALLATION (CONTINUED)

NOTE

When torquing wheel nuts, the temperature of all the wheel end components should be as close as possible to the midpoint of the expected operating range. For example, if the hub will operate between 0°F and 150°F, 75°F is a good temperature to torque at. Room temperature is often a close approximation of the midpoint temperature.

This recommendation is due to the differences in the coefficient of thermal expansion for the various materials in the wheel end including the hub, studs, wheel and brake drum. If the wheel nuts are torqued at temperatures well below the midpoint, when the system warms up, the studs may become overstressed. This could cause the studs to be permanently stretched, leading to nut loosening or damage to the wheel or hub. If the torque is applied at elevated temperatures, the system may become loose and lose clamp at lower temperatures, resulting in wheel damage and broken wheel studs. If the nuts must be torqued at extreme temperatures, the nut torque should be readjusted when the temperature is in the desired range. See also TMC RP250 "Effects of Extreme Temperatures on Wheel Torque and Clamp Load".

NOTE

Use the appropriate nuts with the above technique to install the front and outer dual wheels. Follow your shop practice to locate the valve stems.

8. Inspect the wheel installation by checking the seating of the wheel(s) at the pilots, and by turning the wheel(s) and checking for any irregularity.

⚠ DANGER

Excessive or inadequate wheel nut torque can cause a failure of the wheel mounting system and a wheel separation resulting in severe personal injury or death and property damage. Always use a device that measures the torque being applied. After the first 50-100 miles, retorque all the nuts to 450-500 ft. lbs. Loosen the outer nuts to retorque the inner nuts.

Ball Seat Wheel Mounting System

1. Clean all mating surfaces on the hub, wheels and nuts. Remove loose paint, scale, and any material building around the pilots of the hub and wheels. Be sure paint is fully cured on recently refurbished wheels.

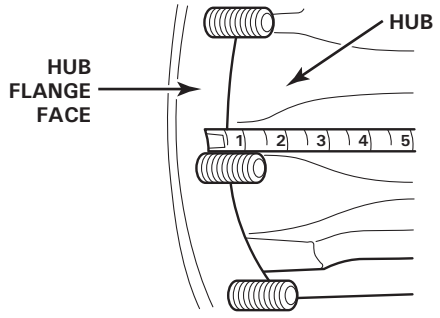
NOTE

When dual wheels are mounted, the stud length should be from 1.31-1.44″ as measured from the hub flange face to the end of the stud (see figure 41).

When mounting dual aluminum wheels, use ALCOA inner cap nuts 5978R and 5978L or the equivalent. These nuts can also be used with longer studs up to 1.88″ standout.

For special single aluminum wheel applications on drive and trailer hubs, use ALCOA single cap nuts 5995R and 5995L, or 5554R and 5554L or the equivalent, depending on the stud thread length (see Table A).

For single steel wheel applications, use BATCO 13-3013R and 13-3013L or the equivalent (see Table B).



Stud Standout
FIGURE 41

Table A: Single Aluminum Wheel Applications

Aluminum Wheels	ALCOA Cap Nut Number
3/4-16″ Threaded Studs	5995R and 5995L or 5554R and 5554L, depending on stud length

Table B: Single Steel Wheel Applications

Steel Wheels	BATCO Cap Nut Number
3/4-16″ Threaded Studs	13-3013R and 13-3013L

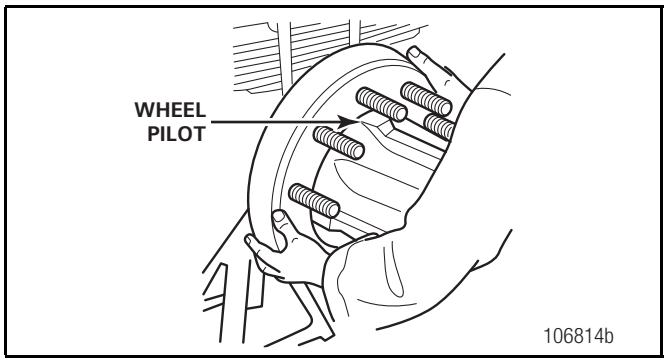
2. When installing the inner wheel and tire assembly, verify the inner nuts being used are suitable for the application: aluminum wheels or steel wheels.

⚠ CAUTION

Inner cap nuts must be deep enough to ensure the stud will not bottom inside the nut and must be of a configuration approved by wheel manufacturer.

3. Rotate the hub to bring a wheel pilot to the top (12 o'clock) position (see figure 42). Position the inner wheel and tire assembly over the studs against the hub.

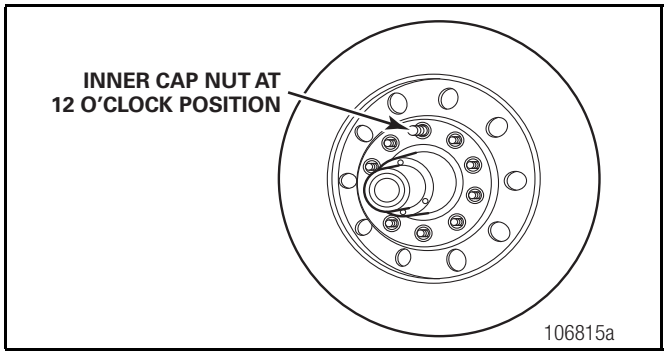
7. WHEEL INSTALLATION (CONTINUED)



Rotating the Wheel Pilot to 12 O'Clock
FIGURE 42

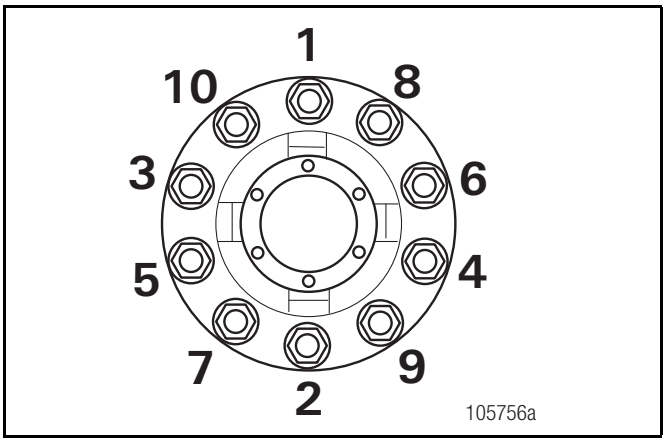
4. Beginning in the 12 o'clock position, install the inner cap nuts by hand to ensure they are not cross-threaded. Do not tighten any nuts at this time.

5. Apply sufficient torque (about 50 ft. lbs.) to the inner top cap nut to draw the wheel up on the wheel pilot and against the hub and seat the ball seat of the nut into the ball socket of the wheel (see figure 43).



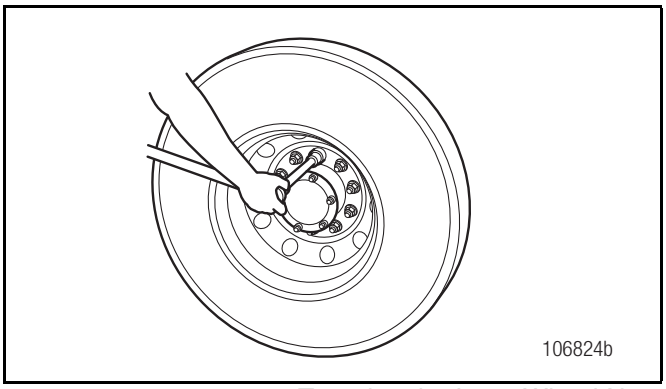
Tightening the Inner Cap Nuts
FIGURE 43

6. To properly center the wheel, snug the remaining wheel nuts. Verify the wheel is in place over the wheel pilot (see figure 44).



10 Stud Tightening Sequence
FIGURE 44

7. Starting with the top nut first and using a staggered pattern, torque the inner wheel nuts in stages to 450-500 ft. lbs. (see figure 45). The last nut rotation must be with a calibrated torquing device.



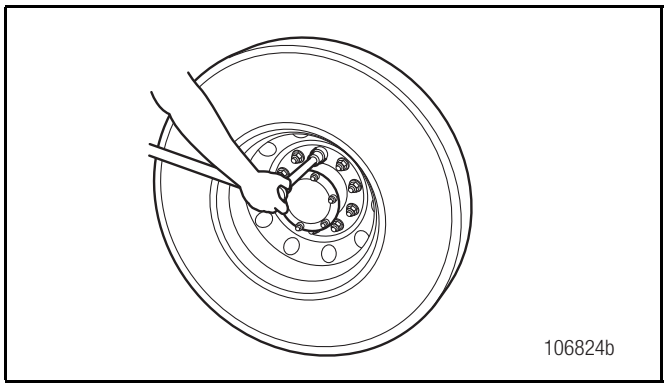
Torquing the Inner Wheel Nuts
FIGURE 45

NOTE

Use the appropriate nuts with the above technique to install the front and outer dual wheels. Follow your shop practice to locate the valve stems.

8. Install the outer wheel and nuts and tighten to 450-500 ft. lbs. (see figure 46). The last nut rotation must be with a calibrated torque device.

7. WHEEL INSTALLATION (CONTINUED)



Torquing the Outer Wheel Nuts
FIGURE 46

9. Inspect the wheel installation by checking the seating of the wheel(s) at the pilots and by turning the wheel(s) and check for any irregularity.

⚠ DANGER

Excessive or inadequate wheel nut torque can cause a failure of the wheel mounting system and a wheel separation resulting in severe personal injury or death and property damage. Always use a device that measures the torque being applied. After the first 50-100 miles, retorque all the nuts to 450-500 ft. lbs. Loosen the outer nuts to retorque the inner nuts.

SERVICE PARTS LIST

Axle Designations

Designation	Typical Axle Rating (lbs.)	Comments
Steer Axle		
FC Steer	8,000	Medium duty
FF Steer	12,000-14,700	Standard linehaul axle. Comes in two spindle variations. 1. Flat locking feature with 12 threads/inch. 2. Keyway locking feature with 18 threads/inch.
FL Steer	20,000	Vocational applications
Drive Axle		
L-Drive	19,000	Medium duty
R-Drive	20,000-23,000	Standard linehaul axle
Trailer Axle		
TN Trailer	22,500	Tapered spindle
TP Trailer	25,000	Parallel spindle or "Propar"

Approved PreSet Oil Seals — Cross Reference

Axle Designation	ConMet Number	SKF Scotseal Plus XL	Timken Outrunner	STEMCO Endeavor
FC Steer	10037958	28759	N/A	N/A
FF Steer	10005430	35058	847	383-0336
FL Steer	10008722	43761	N/A	N/A
L-Drive	10020083	38776	N/A	N/A
R-Drive	10005431	47691	861	393-0373
TN Trailer	10023849	46300	859	373-0343
TP Trailer	10023847	42627	851	373-0323

Approved Trailer Hub Caps

Axle Designation	Type of Lubricant	PreSet Hubs	PreSet Plus Hubs
TN Trailer	Semi-Fluid Grease	10018622	10036694
TP Trailer	Semi-Fluid Grease	10018621	10036693
TN Trailer	Oil	106819	10036692
TP Trailer	Oil	106870	10036691

Seal Installation Tools (SKF Scotseal Plus XL is hand installable)

	Outrunner		Stemco Endeavor		
Axle Designation	Bearing Centering Tool	Adapter Plate	Universal Tool Handle	Fleet Hub Tool	Bearing Guide
FC Steer	N/A	N/A	N/A	N/A	N/A
FF Steer	BCT-6	847T	551-0001	551-5346	570-0020
FL Steer	N/A	N/A	551-0001	551-5327	570-0022
L-Drive	BCT-10	849T	N/A	N/A	N/A
R-Drive	BCT-15	861T	551-0001	551-5320	570-0028
TN Trailer	BCT-13	859T	551-0001	551-5412	570-0026
TP Trailer	BCT-12	851T	551-0001	551-5401	570-0025

SERVICE PARTS LIST (CONTINUED)

ABS Rings for ConMet Hubs (for reference only)

Axle	Material	Type of Brake	Hub Casting Number	ABS Ring Part Number
FC Steer	Iron	Drum	10016569	10016586
FF Steer	Aluminum	Disc	10016331	10009780
			10018723	10009780
			10020207	10009780
		Drum	101945	10009780
			103110	10009780
			104112	10009780
			10000776	10009780
	Iron	Disc	10011945	10009780
			10019965	10023558
		Drum	10005604	10009780
FL	Aluminum	Drum	10012265	10012265
	Iron	Disc	10005561	107912
L-Drive (190)	Iron	Disc	10020602	10023559
		Drum	10020627	10023757
R-Drive	Aluminum	Disc	10016328	103705
		Drum	10001280	103705
	Iron	Drum	10001387	103705
			10018310	103705
			10018311	103705
TN	Aluminum	Drum	102035	105459
TP	Aluminum	Disc	10016620	10019896
		Drum	10001216	105459
	Iron	Drum	10025633	10023829

NOTE

If an ABS ring is not listed for a particular hub, contact ConMet Customer Service at 800-547-9473.

Rebuild Kits and Components

PreSet Plus Hubs	Rebuild Kit	Bearing Spacer	Magnetic Fill Plug	Nut Assembly Kit*	Red Locking Snap Ring*
FF Flat	10036557	10033448	N/A	10036548	10026174
FF Keyway	10036557	10033448	N/A	10036549	10026174
FL	10036558	10034342	N/A	10036550	10031172
R-Drive	10036559	10033404	10033073	10036551	10026147
TN	10036560	10034401	10033073	10036552	10031029
TP	10036561	10034343	10033073	10036553	10030837

Rebuild kit includes seal, bearing spacer, inner cup and cone, outer cup and cone.

Nut assembly kit includes integrated spindle nut, locking washer, red locking snap ring and spiral nut retaining ring.

*Not available for PreSet hub assemblies.

SERVICE PARTS LIST (CONTINUED)

Rebuild Kits and Components

PreSet Hubs	Rebuild Kit	Bearing Spacer	Magnetic Fill Plug
FC Steer	10037697	10014462	N/A
FF Flat	10005434	103592	N/A
FF Keyway	10005434	103592	N/A
FL Steer	10009904	10003807	N/A
L-Drive	10037961	10019884	10033073
R-Drive	10005435	103593	10033073
TN (Tapered)	10005436	104144	10033073
TP (Straight)	10005437	104412	10033073

Rebuild kit includes seal, bearing spacer, inner cup and cone, outer cup and cone.

NOTE

Bearing cups and cones must be replaced as a set.

NOTE

When bearings are replaced in any PreSet hub, it is recommended that the bearing spacer be replaced as well.

Approved Aftermarket Bearing Sets

(Approved suppliers are for aftermarket only and may not be approved for production.)

Description	ConMet Number	Bearing Set Number	Approved Suppliers
FC Steer Axle			
Inner Cup & Cone	10037695	Not available in sets from bearing suppliers.	
Outer Cup & Cone	10037696		
FF Steer Axle			
Inner Cup & Cone	107500	SET427	Timken / General / SKF
Outer Cup & Cone	107501	SET428	
FL Steer Axle			
Inner Cup & Cone	10009902	SET445	Timken / General / SKF
Outer Cup & Cone	10009903	SET446	
L-Drive Axle			
Inner Cup & Cone	10037959	Not available in sets from bearing suppliers.	
Outer Cup & Cone	10037960		
R-Drive Axle			
Inner Cup & Cone	107502	SET429	Timken / General / SKF
Outer Cup & Cone	107503	SET430	
TN Trailer Axle			
Inner Cup & Cone	107504	SET431	Timken / General / SKF
Outer Cup & Cone	107500	SET427	
TP Trailer Axle			
Inner Cup & Cone	107506	SET432	Timken / General / SKF
Outer Cup & Cone	107506	SET432	

SERVICE PARTS LIST (CONTINUED)

Brake Rotor Minimum Thickness

Rotor Part Number	Minimum Thickness
10016195 Flat Rotor	1.65" (41.9 mm)
10003830 Hat Shaped Rotor	1.32" (33.5 mm)
10020109 U-Shaped Rotor	1.46" (37.0 mm)
10019996 Medium Duty Flat Rotor	1.42" (36.1 mm)
10009970 Flat Rotor	1.65" (41.9 mm)

Service Kit Part Numbers

Rotor Part Number	Service Kit Part Number
10016195 Flat Rotor	10018609
10003830 Hat Shaped Rotor	10030921
10020109 U-Shaped Rotor	10020682
10019996 Medium Duty Flat Rotor	10020611
10009970 Flat Rotor	10016390

SPECIFICATIONS

Wheel End Torque Specfications

Item	Measurement	Torque (ft-lbs)	Notes
Ball Seat Wheel Nut	3/4 - 16 1-1/8 - 16	450-500	Always tighten the top nut first or pilot damage may result. If lubricant is used, apply sparingly on threads only. Do not lubricate the faces of the hub, drum, wheel or on the ball seats of the wheel nuts. The last nut rotation should be with a calibrated torque device.
Hub Pilot Wheel Nut	22 mm x 1.5 mm	450-500	Always tighten the top nut first or pilot damage may result. Apply two drops of oil between the nut and nut flange, and two or three drops to the outermost 2 or 3 threads of the wheel studs. Lightly lubricate the wheel pilots on the hub. The last nut rotation should be with a calibrated torque device.
Drive, Studs, Installation Torque	3/4 - 16 5/8 - 18 9/16 - 18 1/2 - 20	40 - 90 40 - 90 40 - 60 40 - 60	
Hub Cap	5/16 - 18	12 - 18	Minimum SAE Grade 5 fasteners, flat washers only.
Oil Fill Plug	1/4 NPT 3/8 NPT 9/16 - 18	20 - 25	 O-Ring Style
Bolt-On ABS Ring Screw	8-32	18-22 in-lbs	-
Disc Brake Rotor Screw	M8 x 1.25 1/2 - 20 9/16 - 12 5/8 - 11 5/8 - 18	18 - 22 100 - 110 130 - 150 190 - 210 155 - 195	-
Disc Brake Rotor Nut	5/8 - 18	180 - 210	-
Disc Brake Rotor	M16 x 1.5	190 - 210	-
Drive Axle Flange Nuts			See axle manufacturer's recommendations for proper drive axle nut torque.
PreSet 2-Piece Nut (FF, FL, R, TN, TP, L)		300 Inner 200 Outer	300 minimum. Advance to nearest lock. Set wrench at 200 for outer nut. **NO BACK OFF.**
PreSet 2-Piece Nut (FC-Medium Duty Steer Hub)		150 Inner 100 Outer	150 minimum. Advance to nearest lock. Set wrench at 100 for outer nut. **NO BACK OFF.**
PreSet 1-Piece Nut (FF, FL, R, TN, TP, L)		300	300 minimum. Advance to nearest lock. **NO BACK OFF.**
PreSet 1-Piece Nut (FC-Medium Duty Steer Hub)		150	150 minimum. Advance to nearest lock. **NO BACK OFF.**
PreSet Plus Drive and Trailer Nut		500	Set wrench at 500. **NO BACK OFF.**
PreSet Plus Steer Nut		300	Set wrench at 300. **NO BACK OFF.**

Notes:

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Notes:

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